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10/594,033	09/25/2006	Waro Iwane	HEI-023	4449

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EXAMINER	
GEBRIEL, SELAM T	

ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,033	IWANE, WARO	
	Examiner	Art Unit	
	SELAM GEBRIEL	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 17* is/are pending in the application.

4a) Of the above claim(s) *4, 5, 9 and 15 - 17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 3, 6 - 8 and10 - 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species 1: Fig. 1, 2a, 2b, 3 - 5, 8 - 10 and 11 (Claims 1 - 3, 6 - 8 and 10 - 14) in the reply filed on 10/08/2009 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 3, 6 – 8 and 10 – 14 rejected under 35 U.S.C. 102(b) as being anticipated by Nayar, Shree K. (WO 03/014796 A1).

Regarding claim 1, Nayar discloses a highlight light suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) comprising:

A camera part (Figure 1 Image focusing device 110, digital light processing apparatus 120, Lens 130, image detector 140 or 610 and DMD controller 121) which acquires a desired image (Page 7 Paragraph 0045, a scene consisting of a bright object 101, a very dark object 102, a bright object 103 and a dark object 104 is to be recorded or captured);

A highlight suppression signal reducing part (Figure 1 Image data processor 150) which produces a highlight suppression signal (Figure 1 control image data 153)

on the basis of an image output (Figure 1 the captured image 151) from one color channel or at least one of two or more color channels output from the camera part (Page 7 & 8 Paragraph 0048 and Page 10 Paragraph 0058, when image detector 610 is used a Bayer color mosaic may be used and since the dynamic range of **each pixel** is controlled independently the captured image can be used to compute a high dynamic range color image, therefore the amount of light disposed on the image detector 610 is suppressed); and

An active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) which is disposed in the vicinity of a focal plane of the camera part and which optically controls, in accordance with the highlight suppression signal (See Figure 1 computed control signal or control image data 153), the amount of light transmitted to an imaging plane of each of the color channels (Page 1 Paragraph 0048 the captured image 151 is analyzed for quality 152 to generate control image data 153 which is fed to the digital light processing apparatus 120 to modulate the intensity of light falling on the detector 140),

Characterized in that the image acquired in the camera part is output, via the active filter part, as a highlight-suppressed image in which highlight is optically suppressed (Page 7 and 8 Section 0048, A second captured image 151 and the previously applied control image data 153 are then used to compute a high quality image data 154 of the scene).

Regarding claim 2, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph

0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) optically controls the amount of light transmitted to each portion of the imaging plane of each color channel in predetermined pixel units or predetermined image area units in accordance with the highlight suppression signal (Page 1 Paragraph 0048 the captured image 151 is analyzed for quality 152 to generate control image data 153 which is fed to the digital light processing apparatus 120 to modulate the intensity of light falling on the detector 140 or 610).

Regarding claim 3, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) is provided in the vicinity of the imaging plane of the camera part (See Figure 1, The digital light processing apparatus is clearly provided in the vicinity of the relay lens 130 and the image detector 140 or 610, wherein the relay lens is positioned to receive one of two possible reflected images from the digital light processing apparatus 120 and to focus the image onto the image detector 140)

Regarding claim 6, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector

610 or 140) according to claim 1, comprising an electronic control part (Figure 1 Image data processor 150 and Processor that processes or compute high quality image 154 of the scene) which electronically suppresses the image output from the camera part on the basis of the highlight suppression signal, wherein the image output acquired in the camera part is optically highlight-suppressed via the active filter, and output as a highlight-suppressed image in which the highlight is electronically suppressed (Page 7 and 8 Paragraph 0048).

Regarding claim 7, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the highlight suppression signal producing part produces a non-binary highlight suppression signal which indicates gradation and the image output acquired in the camera part is output as a highlight-suppressed image in which the highlight suppression is gradationally given by the non-binary highlight suppression signal via the active filter part intensely on a highlight side and weakly on a lowlight side (Page 7 and 8 Paragraph 0048).

Regarding claim 8, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 7, comprising a restore signal producing part which produces a restore signal on the basis of the non-binary highlight suppression signal which indicates the gradation, wherein the highlight-suppressed image in which the

highlight suppression is gradationally given via the active filter part is restored to the gradation of the original image and then output (Page 7 and 8 Paragraph 0048).

Regarding claim 10, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) is provided as a composite element integrated with the imaging element of the camera part (See Figure 1, the digital light processing apparatus is a composite element of the system 100).

Regarding claim 11, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) has a multilayer structure in which elements for control of the amount of transmitted light are arranged on a plurality of stages (Page 8 Paragraph 100, The digital light processing apparatus 120 is a commercially available digital micromirror device or DMD, wherein a very large number of movable micromirrors 201,202 reside on the surface 210 of the DMD, Each micromirror 101, 102 is able to switch at a rapid frequency between two tilt angles on either side of the optical axis 220. The ratio of the time periods a DMD micromirror is at the two tilt angles is proportion to the intensity of the control signal applied to

micromirror. Therefore, the modulation of the light reflected in each of the two directions if a function of the control signals).

Regarding claim 12, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) comprises an element (Figure 1 DMD Controller 121) which controls the amount of transmitted light in accordance with the intensity of incident light instead of the electronic control (Page 7 Paragraph 0048 the captured image 151 is analyzed for quality 152 to generate control image data 153 which is fed to the digital light processing apparatus 120 to modulate the intensity of light falling on the detector 140 or 610).

Regarding claim 13, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the active filter part (Figure 1 digital light processing apparatus 120 and DMD controller 121) controls the transmission time of transmitted light to control the amount of light transmitted to the imaging plane of each color channel (Page 7 Paragraph 0048 the captured image 151 is analyzed for quality 152 to generate control image data 153 which is fed to the digital light processing apparatus 120 to modulate the intensity of light falling on the detector 140 or 610).

Regarding claim 14, Nayar further discloses the highlight suppression image pickup apparatus (Figure 1 and 6, Page 7 Paragraph 0045 and Page 10 Paragraph 0058, a system adaptive imaging enabling high quality imaging using an image detector 610 or 140) according to claim 1, wherein the imaging element image detector 140 or 610 provided on the imaging plane of each color channel controls charge storage time in predetermined pixel units or predetermined image area units to control the sensitivity of the imaging plane (Page 1 Paragraph 0048 the captured image 151 is analyzed for quality 152 to generate control image data 153 which is fed to the digital light processing apparatus 120 to modulate the intensity of light falling on the detector 140 or 610).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(Yamaguchi) US 2002/0012064 A1, disclose a photographing device including an optical lens, a photographing unit for taking an image of a subject imaged through the optical lens and a light quantity adjustment unit for partially adjusting a light quantity of the image of the subject. The light quantity adjustment unit is provided in an optical path of light carrying the image of the subject and between the optical lens and the photographing unit.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SELAM GEBRIEL whose telephone number is (571)270-1652. The examiner can normally be reached on Monday - Friday 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TUAN HO/
Primary Examiner, Art Unit 2622

/SELAM GEBRIEL/
Examiner, Art Unit 2622

Wednesday, November 18, 2009